ENGINEERING ROOM

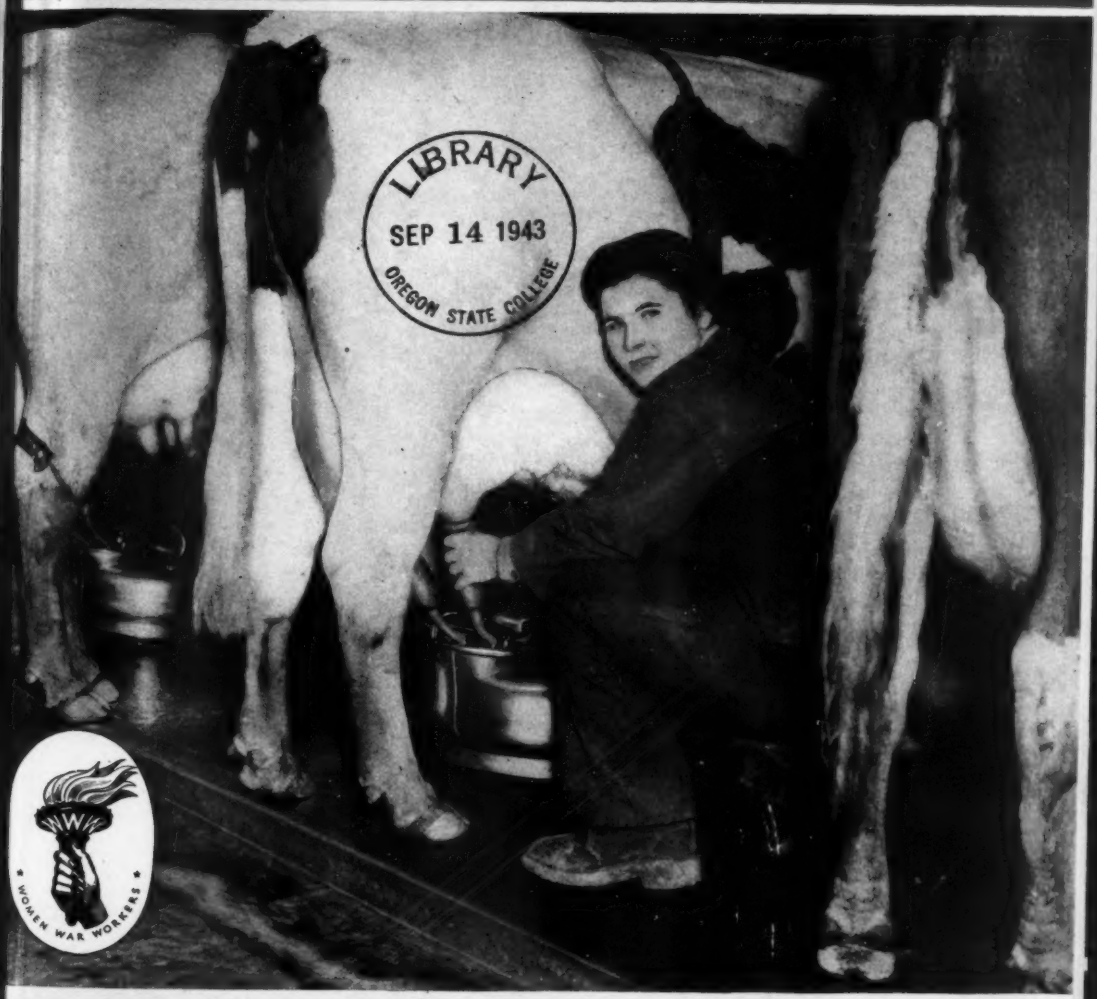
ELECTRICITY on the FARM

The National Magazine of Rural Electrification

SEPTEMBER

Building an Ear Corn Elevator
Debeaking Saves Feed and Fowls
Women in the Land Army
Hybrid Seed Corn — A Side Line
Electric Bicycle Saves Gas
Pumpkin Hollow Serves Hot Lunch

1943



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A CASE – SHEPPERD – MANN PUBLICATION

How to KEEP YOUR MOTORS FIT for WARTIME SERVICE

TOO many of us who own motors have faith in their ability to run forever without attention. But, good service over a long period of time can be expected only from a motor which is properly protected and cared for. In the "all-out" war effort, it is up to you to inspect and lubricate your motors regularly. Give your motor a "starting" chance by checking to see that it is sufficiently protected against overload, dust, and dampness.

1 Guard against Overload

Overload is the most common cause of burned-out motors. There are two principal types of overload protective devices. The usual type used is an automatic thermally operated switch which opens on overload and can be reset manually to reclose the circuit after the overload has been removed. Another type sometimes used is a delayed-action fuse, similar in appearance to a standard fuse, but has special features designed for motor protection.

2 Lubricate Properly

A motor should be lubricated according to the manufacturer's instructions for the individual design. If instruction from this source is not readily available, follow this simple procedure:

To oil a sleeve-bearing motor, add a few drops of light machine oil semi-annually if fittings are provided. On larger units add light machine oil until the filler gage on the side of the housing is about three-quarters full. To lubricate a small ball-bearing motor, disassemble the bearing and pack by hand with special ball-bearing grease. If too much grease is added, the operating temperature will be too high and the grease will leak.

A motor equipped with pressure-gun fittings should be filled with a grease gun. Add grease to the bearing until it begins to flow from the relief hole, and leave out plug until all excess grease is expelled. Check lubrication at least once a year.

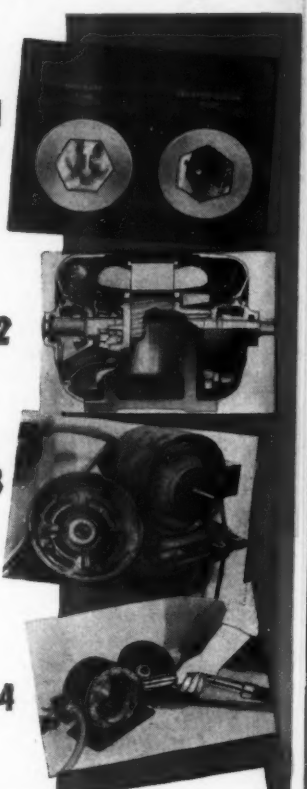
3 Inspect Brushes and Commutator

Brushes and commutator kept free from oil and dirt will cause very little trouble. When brushes are badly worn they should be replaced by new ones. To polish commutator, turn the shaft by hand and use fine sandpaper. Do not use emery cloth. Blow out all dust. Any important repair work should be done by an experienced repairman.

4 Always Protect against Dirt

Try to install your motor where dust, dirt, and moisture are not present. However, many motors must be placed where accumulation of dirt is unavoidable. Dirt left in windings and clogged air passages will cause overheating and eventual burnout.

To clean a motor, remove the bolts from the end shield and lift it away from the frame of the motor. Clean the windings of your motor, using your vacuum cleaner with attachment. Clean the commutator with a cloth dampened with a safe cleaning solvent.



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Editor's Chat

FREEDOM'S BONDS

A new War Bond drive is on. There are two main reasons why our Government is selling War Bonds. The first is to help finance the war. War costs cannot be paid as we go with taxes. The second is to provide attractive safe keeping for excess funds to prevent inflation—spiralling prices that will devalue our dollars, our savings and our insurance.

Each month we urge our readers to buy War Bonds. But not once have we indulged in rosy babblings about the autogyros or the talking pink refrigerators you can buy with Bonds the week or the year the war ends. We believe that just the plain truth is the best Bond salesman for real Americans.

Why should we buy bonds?

We love America; its freedoms, its opportunities. We are fighting to preserve them. It is your war and mine as well as General Eisenhower's and Secretary Morgenthau's. It is our responsibility to finance it.

Anyone who is making more money now than before the war is doing so because of the war. He should be willing to lend those war profits back to the Government to help carry on the war. Some citizens are not so fortunate. They have lost what they had; even their lives.

With a severely limited amount of goods for sale and war "wages" in people's pockets, it is next to impossible to hold prices down. Inflation is a robber. The inevitable reaction following inflation is always disastrous to farming. From selfish reasons, if not for patriotism, we should help avoid inflation. Those dollars that burn our pockets can be safely used to pay debts and buy bonds.

War Bonds are a good investment. If held to maturity they pay good interest. And they should be held to maturity. Just reason for yourself what would happen if everyone asked the Treasury to cash their bonds so they could buy something the year the war ends. Where would the money come from? Where would the goods come from? Better face the facts and buy Bonds to hold to maturity except in case of emergency.

By buying War Bonds we are backing and equipping our sons in the service, we are hastening the end of the war, we are helping to prevent a rise in living costs and we will be laying up a blessing for ourselves when those bonds mature.

FARM EQUIPMENT

The Government has finally allotted more materials for farm machines and equipment and made it easier for farmers to buy that equipment.

Just remember that while manufacturers are doing the best they can with what is available, machines are probably made of different materials than they were before the war or will be after it is over. It might be well to guard against buying for greed or just because one has money in the bank. Buy sensibly *for war production* and that extra farm production which will be needed for several years after the war ends. Think twice before you buy now, just because you can.

IT HAPPENED AGAIN

The usual dry spells during the growing season were with us again this year. Tomatoes ripened during the dry period before they were full grown and the leaves turned brown and dropped off. Mid-summer planted seeds reached babyhood, then withered and died. Unwatered second crop beans just marked time. While the drought damage to your garden is fresh in mind, it is a good time to plan how to water it next year.

SAVE SOIL

If there are no large machines and crews available for making terraces, you can still save soil and farms with contour plowing, strip cropping and a little winter work with brush and rock dams in insipient gullies.

Geo. W. Kable

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★ WARTIME STRATEGY ON THE FARM ★

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This booklet also contains helpful "Check Charts" describing common motor-trouble symptoms and their remedies.

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These two books are free. Write for them. Address: Rural Electrification, Dept. EF-93.

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ELECTRICAL PARTNER OF AGRICULTURE

Building An Ear Corn Elevator

By R. E. JOHNSON
Toledo Edison Co.

THE scooping of ear corn into overhead crib space was never an easy task and with the labor shortage resulting from war-time manpower needs, many northwestern Ohio farmers have constructed portable, inclined elevators powered by small electric motors to perform this work.

One of the first, built by Ed Forrest, Wauseon, Ohio, was described in an article by Virgil Marvin, Agricultural Engineer, in the January, 1943, issue of ELECTRICITY ON THE FARM. Since this article appeared, farm machinery repair parts, suitable for constructing an elevator, have become available in considerably greater volume. The farm labor supply is certainly no better. Considering these facts, this information giving a list of commercial corn picker parts required, as well as construction details, has been prepared as a guide for building an elevator with a minimum of difficulty, particularly in the selection of commercial parts suitable for the assembly.

Since International Harvester Company facilities were readily available, their parts have been specified; however, equivalent parts supplied by other farm machinery manufacturers are fully as suitable and maybe more readily available to some readers. Only the lumber, motor, V-belt, V-belt pulleys and counter shaft must be secured from other sources.

Lower end of the elevator showing the mounting of the ½ hp motor, and the V-belt drive. When a motor is mounted in this manner, the end bells of the motor must be turned so the oil holes will be on top.

Another view of the motor mounting and the roller chain speed reduction at the lower end of the elevator. The wheel mounting may usually be made up from old machinery parts on the farm.

By no means all of the 60 portable ear corn elevators in this area were built from the exact parts listed above, but some very excellent ones have been. Their performance has been most satisfying. One built thirty feet in length by a Blissfield, Michigan, farmer was used to crib 11,500 bushels of corn last winter using a ½ hp motor as the driving power. This is the elevator shown on page 8. That elevator differs from these plans only in that flareboards on the chute were provided. Flareboards do make an improvement, but add weight and complicate the design so are not usually employed. Moreover, a 20 foot or 22 foot elevator is generally considered adequate because the lower end can be blocked up to reach a higher crib opening. When so constructed, the elevator can be readily moved by two men.

Make in Lengths To Meet Requirements

Actually the elevator can be made in any reasonable length as desired to fit specific needs.

Conveyor chain with flights attached are available in 12 foot lengths with eleven flights spaced one foot apart. Two or more 12 foot units and individual flights and chain links should be purchased to complete a conveyor chain of any desired length. Gearing has been selected to move the

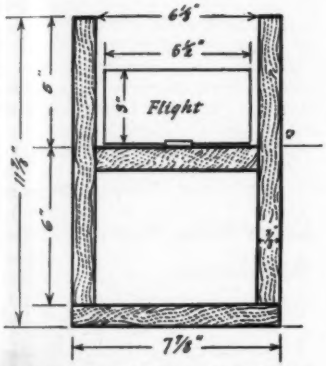
conveyor chain at the rate of 200 feet per minute.

No. 62 conveyor chain has been specified because of its availability. In case it is preferred to use chain of a different width and pitch, care must be given to the selection of sprockets on which the chain will mesh properly.

Although an elevator of this type is somewhat more efficient when driven from the upper sprocket, bottom sprocket drive has been recommended because:

First, the unit is more stable and more readily moved when the heaviest weight is located at the lower end;

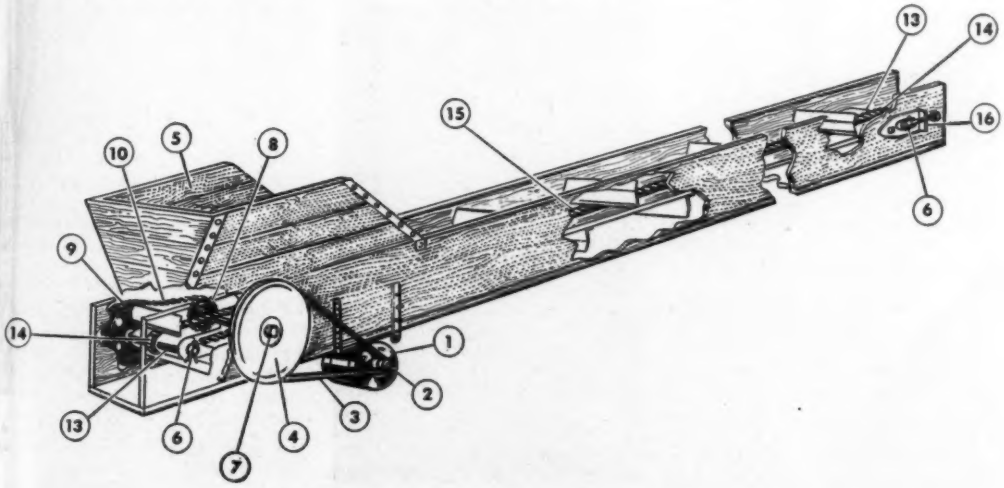
Second, many crib openings will not accommodate an elevator with the power equipment mounted at the upper end. For those cases where upper end drive is pre-



CROSS SECTION OF CHUTE

Parts for Ear Corn Elevator

Assembly No. (See Drawing)	Description	Quantity	I.H.C. Part No.	Other Parts
1	½ hp 230 V. 1 ph. 60 cy. Repulsion Induction or Capacitor Motor	1		
2	2.4" p.d. sheave for motor shaft	1		Rockwood #BS-26
3	V-belt, B section	1		Rockwood #1496
4	10.4" p.d. sheave for countershaft	1		Rockwood #1102
	Bushing, 1" to ⅞"	1		Rockwood #10018
5	Lumber—⅞" thickness for chute and hopper	As required		
6	Shaft, ¾" x 12 1/16" shaft	2	U-16910	
7	Shaft, ⅞" x 15" cold rolled steel counter shaft	1		Purchase from machine shop
8	Sprocket, 18 tooth	1	U-1904	
9	Sprocket, 38 tooth	1	UA-1931	
10	Roller chain, ¾" pitch	1	1338 D	
	Roller chain, ¾" pitch	1	1340 DA	
11	Keys	2	141	
12	Bearing Box	6	U-1303	
	Roller Bearing	6	1359	
	Grease Fitting	6	14178 DA	
13	Bottom extension Upper	2	U-18466	
14	Conveyor chain sprocket, 8 tooth	2	UA-1455	
	Pins for attaching sprocket to shaft	4		
15	Conveyor chain unit with 11 flights attached per 12 foot length	As required	U-17407	
	Flights, extra, complete	As required	U-15779	
	Conveyor chain links, extra	As required	#62	
16	Chain tension adjustment plates Right	1	U-18232	
	Left	1	U-18233	
	Chain tension adjustment eye bolts	2	U-15977	
	Chain tension adjustment holding bolt	1		
	Chain tension adjustment spacer ⅜" x 6½" iron pipe	1		
Misc. Items	Step washers, ⅞"	6	M-3388	
	Flat washers, ⅞"	6		
	Carriage bolts	As required		
	Wood screws	As required		
	Cotter keys	6		
	Small section of fabric belting to close lower side of hopper	1		



An ear corn and small grain elevator of all metal, welded construction. It has an 8½-in. chute, 27 ft. long, and a 1 hp motor, and has a capacity of 600 bu per hr. A V-belt speed reduction is used in place of the roller chain reduction shown in the sketch. The elevator was built by the Bruce Shaffer auto repair shop for Walter Poths of Delta, Ohio.

ferred, it is necessary only to attach the roller chain sprocket (Part No. 9) to the upper shaft and to relocate the counter shaft and motor accordingly.

Assembly

In assembling the chute, care should be taken to stagger the joints in the lumber to provide maximum strength to the structure. Reinforcement at the joints is not ordinarily considered necessary for elevators up to 22 feet in length when wood screws are used to assemble the chute. The metal parts may then be readily installed where indicated in the diagram.

Since a suitable speed reduction shaft (Part No. 7) is not available from International Harvester Company stock, one can be made from a 15 inch length of ⅞ inch cold rolled steel.

It is sugested that the inside of the trough and hopper be given a coat of linseed oil cut with turpentine and other wooden parts be painted to improve appearance and to provide greater resistance to weathering.

All material, including the ¼ hp electric motor for the 30 foot elevator shown in the illustration was reported by the builder to cost slightly less than $130.00. All parts required may, at present, be purchased by farmers without applying for a priority rating.

Also Useful in Handling the Small Grains

In addition to elevating ear corn, the conveyor has been successfully used for elevating wheat, oats, and other small grains. It has also been used to elevate soybeans to storage. It is an all around piece of equipment designed by farmers to improve the efficiency of their own farms. Its popularity in this time of scarce farm labor is attested by the fact that in addition to the sixty now in use, several others are in process of construction.

Since a ½ hp electric motor will operate approximately two hours per kilowatt hour consumed, the power cost for operating the equipment is exceptionally low.

Eggs Cooled in a Milk Cooler

Eggs are a highly perishable product that are frequently reduced in quality because of inadequate cooling and storage facilities on the farm. Quality once lost cannot be restored, therefore it is important that they receive the best of care at the source.

Mrs. Oscar Trudel, an Ohio farm woman, finds that eggs, if chilled rapidly in the milk cooler, keep better and bring a higher price on the market. The eggs are not immersed in the water, but are placed on a removable shelf above the water where they are allowed to remain until the evening's milk is ready to go into the cooler.

After removal from the cooler the eggs are stored in a well humidified storage cabinet in the Trudel basement where they are kept until the weekly consignment is scheduled to go to the egg auction.

This profitable practice was started two years ago and has proven to be a practical way to make use of the milk cooler throughout the 12-hour period of the day when not used for cooling or storing milk.

Be careful not to have any dirt on the egg baskets.

R. E. Johnson.

Something New in Appliances

Jackie, the six-year-old son of a rural service man at Fortuna, California, is electrically minded. Naturally so, because electricity is his father's favorite topic and all the dairy ranches and poultry farms he sees are completely electrified.

That is, nearly all of them are. The other day Jackie's mother took him to nearby Ferndale to visit some friends who have a small flock of chickens. He returned home bubbling over with excitement.

"Guess what, dad," he reported eagerly, "they use *a hen* for a brooder!"

Comb honey is now only about 15 percent of the honey crop of the country—and is sold mainly in the South as "chunk" honey. In many large cities, section comb —once the leading form— is now almost never seen except in specialty stores.

—H. J. Clay, U.S.D.A.

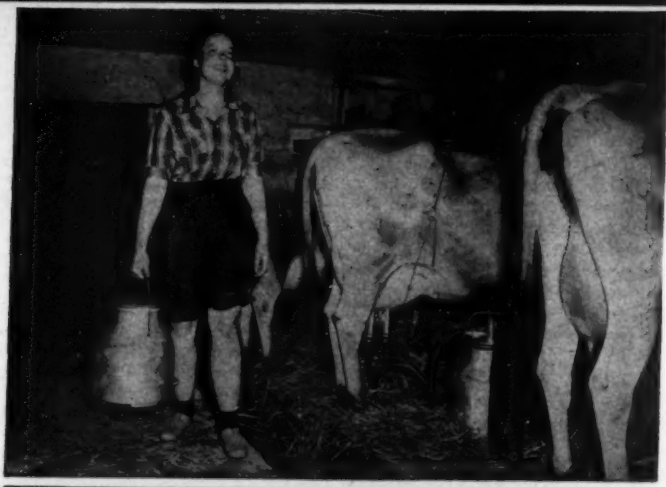
Our cover this month is a tribute to Women in War Work on the Farm. All over the land, farm women or women from town are helping in producing the farm products so urgently needed in this war. We hail the women farm workers. They are doing just as important, if not as spectacular a job as the WACS, WAVES or SPARS.

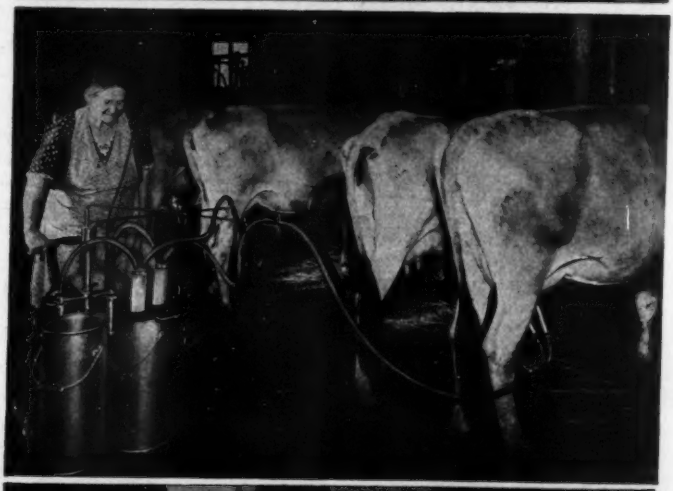
Milking *is* an important job.

Milk is one of the most critical, most valuable farm war products.

In the past two years great improvements have taken place in machine milking through the simple expedient of timing. By removing the machine immediately on or shortly before the completion of milking, and finishing by stripping, most cows soon accommodate themselves to shorter milking periods. The result is quicker milking, more complete milking with little stripping, with probably less chance for any irritation or injury to the cow.

With women taking over the milking machines, an opportunity presents itself, not only to do a worth while war job, but through cleanliness, gentleness and the adoption of timed milking, to demonstrate an improved dairy technique that will bless the industry long after the war is over.





Cover illustration is of 19-year-old Mary Borgess, Norwalk, Calif. She and two brothers milk around 103 Holsteins in 2½ hours with four units and an extra pail. Photo by F. L. Hendren, Babson Bros. Co., Chicago.

Top. Photo submitted by Bruce Fearn, Phila. Elec. Co., Coatesville, Pa.

Center. Photo submitted by Roy White, Detroit Edison Co., Port Huron, Mich.

Bottom. Mrs. Delmar Saraner, Elgin, Ill. does the milking while her husband works in a war plant. Photo submitted by E. T. Leavitt, International Harvester Co., Chicago.

Good Wiring is Safe

Poor Judgment in Placing Wires on a Windmill Tower Killed a Cow. It Could Easily Have Been Prevented

THIS is the second article about farm wiring where a mistake was made that resulted in an expensive loss to the owner. The purpose of the series of articles is to show how bad wiring may occur and how easily it may be avoided or corrected.

On this farm the dairyman had installed a yard light on one leg of a steel windmill tower. The tower was halfway between the house and the barn, and this was a convenient place to install the light to illuminate the passageway. The electric wires leading from the house to the barn and also the wires controlling the light were attached to this same tower leg. Also running up this tower leg was the wire attached to the windmill head to throw the wheel out of the wind.

Insulation Is Rubbed Off

Everything went along satisfactorily for a long time until the periodic whipping of the wind caused the yard light wires and the windmill control wire to rub together until the insulation was rubbed off the electric wires. Even then, when the yard light was turned off, nothing happened.

Then one night the farmer visited a little too long with his neighbor and had to do his milking after dark. He turned on his yard light and drove in the cows. The first cow to take a drink out of the drinking cups was killed instantly. Current from the live wire feeding the yard light had short circuited to the wheel control wire, passed through the windmill tower and the water pipe to the drinking cups, and then through the cow's body to ground. If a man had happened to go to the windmill to turn off the wheel and had had wet shoes on a wet platform, he might have been the victim instead of the cow.

The question might be asked: Why did the current pass through the cow to ground instead of going to ground through the windmill tower or the water pipe or metal stanchions? While we do not know, it is probable that some of the current did find its way to ground through some of those paths. The path through the cow, with her hind feet on concrete moist with urine offered less resistance than the other paths, and that is the way most of the electricity went. It does not take a great amount to kill a cow.

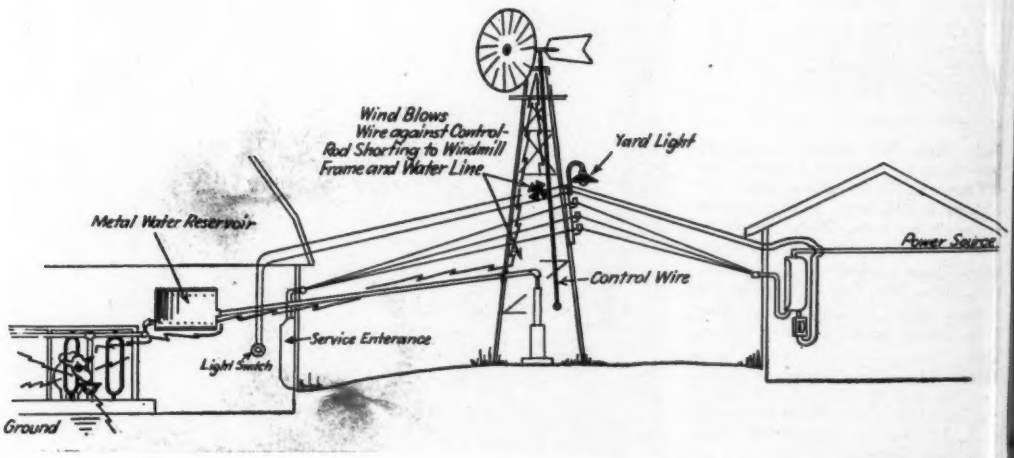
Avoid Such Accidents

The accident might have been avoided had the wires been so supported that they had nothing to rub against to wear off the insulation. They should also have been so placed that there could be no short circuit even if the insulation did rub or rot off. I have seen outside wires with the insulation hanging in shreds from long exposure to the weather. Or, if the water piping and stanchions had been grounded so the resistance to ground through that path had been less than through the cow, the cow would have been saved.

Fuses Should Protect

Ordinarily a short circuit, where the live wire comes in contact with anything connected to ground, should blow the circuit fuse. Or if the insulation on both of the two wires leading to the yard light had been worn off so that both had touched the control wire simultaneously, it would certainly have blown the fuse—unless a penny had been placed behind it, or it had been made ineffective in some other way.

The lessons to be learned from this accident are that the loss of the cow could not be blamed on the drinking cups, on the water piping or even on the yardlight. It was a case of improper wire installation and thoughtlessness. If you have any hazardous spots in your wiring, any circuits overfused or penny-fused it will be well to correct them. This installation "got by" for a long time —then the cow was killed.



Hybrid Seed Corn— A Side Line

The Millers Grow and Process Hybrid Seed Corn as an Extra Money Maker on Their Rented Farm. Electricity Helps Them

By **GEORGE R. HARRISON**

HYBRID seed corn, more than 500 bushels a year, adds to the income of Otis M. Miller and his son Lloyd who farm more than 400 acres of fine land near Kouts, Indiana. Four years ago they began this little seed corn industry as a side line to their regular farming that includes all general crops, Polled Angus cattle, dairy cows, and hogs. A cattle shed was converted into a seed house and equipment for curing, grading and keeping the corn, was installed. Now as each winter rolls around, Miller & Son know that they will have enough work to keep them earning until spring. In any otherwise slack time they keep busy in the seed house.

This former cattle shed, with a coal stove for heating, is clean, comfortable and convenient. The corn in the ear comes in from the twelve-acre field to repose on shelves in racks all over the lower floor; also, to be laid carefully in tiers over the slatted floor of the loft that is well ventilated. A fire is kept in the stove night and day until the ears are cured down to thirteen per cent moisture content, after which the shelling and grading begin.

Motor Put On Hand Sheller

The sheller is a small one as compared with those used in big commercial seed corn plants. In fact, it was a regular hand machine until Mr. Miller and Lloyd harnessed it to a one-third horsepower motor that is mounted on a shelf attached to the sheller's legs. After all the corn on the main floor is processed, that in the loft is dumped into a hopper and down a metal chute into the sheller feed hopper. In one of the pictures this chute from upstairs can be seen; also, the motor that runs the sheller.

This third horsepower motor for the sheller is the largest one in the plant. Although the graders for the corn loom several times larger than the sheller, they don't take much power, according to Mr. Miller. The "Morecorn grader," some eight or ten feet long, has only a fourth horsepower motor, as has also the smaller Hart-Carter grader.

Shelled corn is first cleaned and graded into two grades in one operation. Then the corn is rerun to be split three ways, according to kernel size and shape.

Any one of the machines can be moved about the building for convenience, and there are ample plug-ins for the relocations. In fact, electricity is everywhere in the building, and there are lamps enough to make night work like day.

Mr. Miller shelling seed corn with a one-third horsepower motor belted to a hand sheller. The chute brings the corn from second story storage and drying racks.

The Morecorn cleaner and grader powered with a one-quarter horsepower motor. Culls and chaff in pails at left, two sizes of kernels at right and the round butt and tip kernels from the small drum at the right end.

"We can move the machines into other buildings, too, and have the current for them," said Mr. Miller, for in all buildings we have ample outlets.

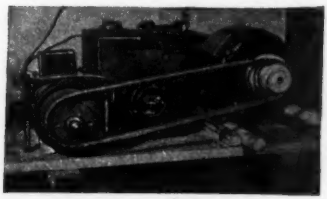
"Without electricity, the seed corn crop would mean too much hard work," Lloyd believed. Think of the hand sheller alone," he added. "It might be all right for a little job, but not for one that lasts like this one does."

The Millers who live on a rented farm do none of the in-

breeding. It would take too much time away from the regular farming, they explain. They buy their first cross seed from the Purdue Agricultural Alumni Seed Improvement Association. They get a lot of satisfaction out of growing seed for themselves and for their farmer friends nearby.

Battery Charger

This battery charger was on exhibit during Farmer's Week at Ohio State University. It is made



from a generator and ammeter salvaged from an old car and is driven by a one-quarter horsepower motor. Pulleys were selected to give a generator speed of between 1000 and 1200 rpm. Pulleys that may be used are 2″ to 3″, 2½″ to 4″, 3″ to 5″. The smaller pulley should be on the motor and the larger on the generator. This is based on a 1720 rpm motor.

Handy Pump

This small gear pump was an oil pump on an old automobile. It is mounted on a wood block and driven by a one-quarter horsepower motor. Street-ells were brazed into the suction and discharge openings so pipe connections could be made. The pump may be used for pumping fuel or oil out of barrels, as a sump pump in a cellar or wherever small quantities of liquid are to be lifted. This outfit was made up by the Toledo Edison Co.

Debeaking

Something New in Poultry Management

"CONSERVATION of poultry feed and the rapid fattening of fryer chickens are advantages of the new poultry beak-burning process demonstrated by C. T. Moyle and Warren K. Hooper of El Cajon and Fred Campbell of Lemon Grove at recent farm advisor's meetings at Grossmont and Escondido.

"William Heidel of El Cajon said birds will not waste feed with bills burned back, and will gain weight faster than untreated fowl. He said burning is sound in view of the feed scarcity.

"Allan Hardy discussed the feed crisis in the Escondido area, and Ralph Sexauer spoke on it at Grossmont. Both said rationing may be necessary unless further supplies are shipped into the county."

The above is quoted from the San Diego Morning Union.

To anyone outside of San Diego County, Cal., it may sound as if someone had gone suddenly berserk and inhumane over the prospective shortage of animal feeds. Not so. Our good friend, Jim Lyon of the Lyon Rural Electric Co., gives us some further information on the subject.

"San Diego County is apparently the birthplace of a new system of treating poultry," he says. "This system has been in use for two years or so and the results are definitely worth while. There is more uniformity in the quality of birds raised, a greater gain in weight per pound of feed consumed, the elimination of waste feed from birds throwing it out of the hoppers, and there is no more picking and feather pulling."

The debeaking process consists of shortening the beak—taking the sharp point and hook off the end. A system of cauterizing the beak electrically has been perfected so it heals quickly and prevents infection and bleeding.

Maybe San Diego County poultrymen have something. What poultryman has not wished that he could prevent the chicks and hens from hooking mash out onto the floor? Nature in her wisdom provided the hen with a hooked beak to dig and scratch for bugs and seeds. She no longer has to mine or dig her food. It is placed in the hopper before her. And the red lights, the hen goggles and the automatic aluminum face slappers that are used on hens to prevent pecking and cannibalism bespeak the seriousness of that combative problem in modern close quarters. Add the possibility of more economical gains and uniform development, and who isn't interested?

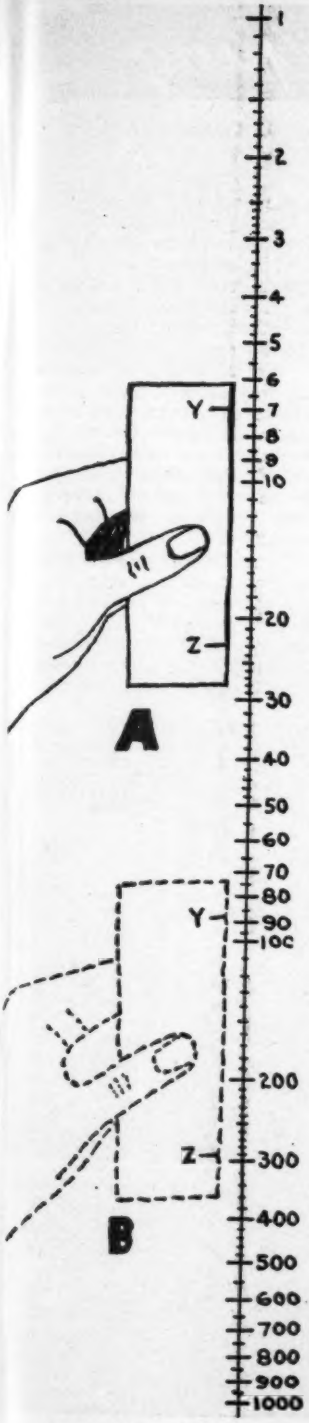
The actual debeaking is an electrical process. Once again, it is the little thing that electricity does that makes the big thing click. We have the temperature control in the brooder and refrigerator; the pressure switch in the water system, the motors on the gun turrets. Now a debeaker.

The Lyon Electric Co., alert to new developments and located in San Diego, has developed a little machine which, Jim says, enables an inexperienced operator to treat more than 150 birds per hour. It uses 400 watts and sells for $12 complete.

This is a new development. We know no more about it than we have told you. It would seem to be harmless even if one did not get the 20 per cent added gain on the same amount of feed as reported by one San Diego poultryman. It is something worth watching.

What Size Pulley

and Other Ratio Problems



THIS simple and handy computer does away with formulas and pencil figuring for solving any ordinary problem that involves ratios. It is applicable to a surprisingly wide variety of situations.

For example, it will be found to be a quick and satisfactory method for determining the sizes of sheaves for pulleys to be used in a drive.

Thus if you want one shaft to run at 88 rpm and the other shaft to run at 290 rpm, make marks Y and Z on a slip of paper in position "B" opposite the 88 and 290 as indicated.

Now move the slip upward or downward to get any combination of diameters you want. The ratio will always be 88 to 290.

Thus if you happen to have a 7-in. pulley, which you think would be suitable for the 290 rpm shaft, bring the Y-mark opposite the 7 as in position "A." The Z-mark then says that the other pulley must be 23 inches in diameter. Or if Y is placed at 10, the "Z" pulley will be 33.

Set up your radio first, as, in the case of the pulleys $\frac{88}{290} = \frac{7}{x}$.

If you measure *down* the scale from 88, then measure *down* from 7.

The chart also lends itself readily to the solution of such a problem as, knowing the pulley diameters and knowing the speed of one of the pulleys, what is the speed of the other pulley? Try it.

Also, you can add ciphers to the figures on the scale where necessary. Just add them mentally as you go along. Thus if in the above example the speeds were 880 and 2,900 rpm, position "B" applies in exactly the same way and you would get 7 in. and 23 in. respectively in position "A." But remember this: when you add a cipher to one you must also add a cipher to the other.

If your measurement carries off the scale at the bottom, make a mark on the paper at 1,000 and slide the paper up to the top until the mark is opposite 1 and read the result opposite the Z, bearing in mind that the 1 is now 1,000 and the 2 is 2,000, etc. If you run off at the top, mark the 1 and slide it down opposite 1,000. The 1,000 now represents 1; the 900 is 0.9, etc. A little practice will show you many ways to use this chart.

W. F. SCHAPHORST.

Water Warmers

It is warm now. But a few months from now there will be icy mornings when the water in the hen house will be frozen. We are paying 65c per dozen for eggs now (July) in New York and the prospects for this winter are brighter for the seller than the buyer. When your hen-house lights snap on early on winter mornings, you had better have water there ready for the hens if you want the best production.

Manufacturers have been authorized by WPB to make water warmers. If you are going to need any next winter, it is best to get them now when a supply is available and when you will not need to "shift along" until a shipment can be made.

"He used to live on a farm and wants to know if he *has* to sleep until 5 A.M."

Electrical Housekeeping

Edited by **GAIL MEREDITH**

Hot Lunch in the
Pumpkin Hollow School

ON its way from the gulf to Lake Superior, U. S. Highway 51 runs out of Madison to the north. Once you pass the stop and go lights at the Midnite Sun, you swing across a long flat that rises slowly at the far side to a little wooded ridge. Leaving the highway on the road that crosses the ridge, you will drive straight into Pumpkin Hollow.

Pumpkin Hollow isn't just a valley as you might suppose, but a community of fertile farms spreading out over the gently rolling hills that mark the valley's edge.

It is not a new community and for the most part, the same families have farmed the same farms for years. They have long had a well-organized community club made up of all the families on the nearby farms. There is a mother's club, too, that takes an active interest in the problems of the Pumpkin Hollow school.

Use Electric Hot Plate

It was these two clubs that got together as much as fifteen years ago and had the school house wired for cooking. They bought a three burner electric hot plate and made plans for a daily hot lunch for those children that live too far from the school to go home at noon.

"There'd been lots of talk about hot lunches," one mother told me, "but we'd never been satisfied to go ahead with it until we got this hot plate. This way we know it's safe. There isn't any need to tinker with it, and there's no way the children can set themselves or the school house afire."

They began, so they tell me, having the teachers cook the noon meal from food the children brought from home. Then, because teachers never have enough time to teach all the things they really want to teach, they gave that up and each child brought a dish of food from home to be warmed up at school. This meant dozens of different dishes, all sizes and shapes, to pack together and heat up by noon. Then the School Board stepped in and bought a supply of half pint jars. One of these is given to each child to use for his lunch throughout the year.

"What is the hot lunch season?" I asked Mrs. Jean Jackson, who has been teaching there in Pumpkin Hollow for the last two years.

"From the first day of school to the last," she answered, smiling.

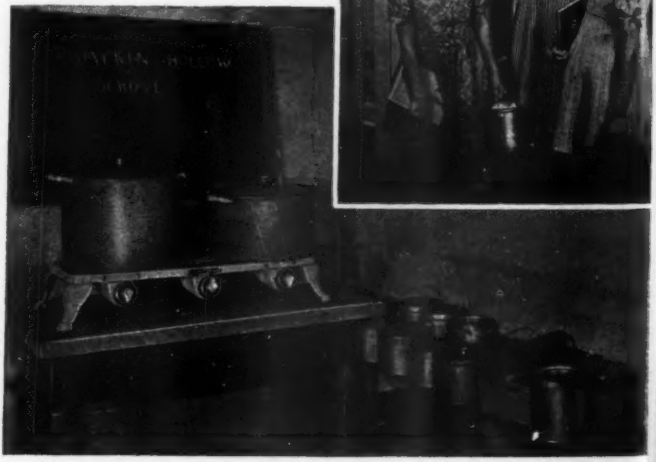
"Do all of the children bring food to be heated up?"

"No, unfortunately, they don't, and the very ones who neglect it are the ones who need it most."

"Then you feel it makes a great difference in the children's work?" I asked.

"Definitely. After a good hot lunch a child shows greater vigor and enthusiasm for study. He is better-tempered and more orderly. We think it is so important that we teachers have given a prize to each pupil who brought food to be heated for his lunch every day for a month. And the mother's club offered other prizes for the whole year. There were many children winning both prizes."

The method they use is so simple that it puts no extra burden of preparation on either the family or the school. The children take their dinner pails downstairs and put their little jars of food to



Right: Hot lunches help to make bright faces and alert minds. **Below:** The fifteen-year-old three-unit hotplate used for hot lunches at Pumpkin Hollow School.

Pumpkin Hollow School

be warmed up into one of the enameled kettles standing on a burner of the electric hot plate. A teacher or one of the older girls helps with the packing if need be, puts an inch of water in

A hot-lunch-to-be on its way to school on the handle-bars.

the bottom of the kettle, and covers it tightly with a well fitting lid.

When recess comes, at 10:30, some child is sent down to turn both switches to Medium. By eleven thirty the food is hot.

Warm Food Smells Good

The children sit quietly at their desks with the rest of their lunch spread out before them on paper napkins. A teacher brings the jars up stairs on a tray and passes them to their owners. As the lids come off the jars, appetizing smells of soup, the fragrance of hot meat, and the welcome smell of carrots drift through the room and everyone finds he is ravenously hungry and eager to get at his eating.

What is the hot dish, usually?" I asked.

"A vegetable of some kind," Mrs. Jackson answered. "We do all we can to encourage their bringing vegetables. I suppose if the children had their way, many of them would bring hot chocolate every day in the year and let it go at that. As it is, carrots and tomatoes appear oftener than anything else."

"They need the vegetables at noon if they are to get all they need in the day's meals," said Mrs. Clarence Bostad, who has one little daughter in school today. "I like having the hot lunch this way because it let's me plan the child's food better. And it is no work at all. We have dinner at night, and as I'm clearing the table, I just fill a jar with some of the vegetables we have left and put it into the refrigerator ready for the morning. Besides this, I usually send a sandwich and some fruit. Milk, of course, and often raw carrots and celery. Our children are fond of these. It just seems to me giving the children a hot lunch couldn't be made any easier—for us or the teachers."

Your Vacuum Cleaner

USE your vacuum cleaner on your rugs frequently. It will get out the hidden dirt and grit and make them last longer. Check the nozzle adjustment to make sure you are using it correctly on rugs of varying thickness. Keep an eye on the floor as you clean. Pick up hair pins, nails, or any small metal objects yourself before the cleaner gets them. If they do slide into the nozzle and up to the bag, they might take a nick out of the rubber belt that is hard to replace these days, do some harm to the fan blades, or punch a hole in the bag itself.

USE your vacuum cleaner or attachments on upholstered furniture, on draperies, on mattresses, to dust walls, the tops of windows and doors, corners between floor and baseboard, behind radiators, and any hard to get at spots.

CHECK the belt occasionally to see if there is tension enough to keep the brush revolving.

KEEP the brush free of ravelings and hair, and make sure that its bristles extend a little below the bottom of the nozzle.

EMPTY the dust bag frequently. Turn it wrong side out occasionally and give it a thorough brushing, but do not try to wash it.

OIL the vacuum cleaner according to directions. A film of oil between moving parts reduces friction and prevents wear.

GIVE it elbow room in the cleaning closet. It shouldn't be knocked about or crowded into corners where it may suffer a poke from some sharp tool or be banged and dented by having something heavy dropped onto it.

By reducing household matches 1/16 and ¼ of an inch, 7,000,000 board feet of lumber were saved last year.

PRACTICAL SCHOOL STYLES

Pattern 9207—Pert jumper and contrasting blouse for the younger set. Sizes 2 to 10. Size 6, jumper, 1⅛ yards 54 inch fabric; blouse, ¾ yard 39 inch fabric.

Pattern 4320—A neat, smooth-hipped two piecer for campus or office. Sizes 12 to 20. Size 16 requires 3¾ yards 39 inch fabric.

Pattern 9376—A full shirred skirt and Peter Pan collar make this an ideal school frock. Sizes 6 to 14. Size 10 requires 2⅛ yards 35 inch fabric; ¼ yard contrast.

Price of each pattern 16c (in coins). Send orders to ELECTRICITY ON THE FARM, Pattern Dept., 243 W. 17th Street, New York, N. Y. Allow plenty of time.

The Way You Wrap It—

How to Keep Dehydrated Foods

The way you package your home dried garden crops is highly important in their keeping. Both vegetables and fruits should be put up in small packages with the containers so full that the food displaces most of the air, because air is one of the enemies of keeping and quality. Dried foods do not remain at their best very long after they are opened, so the package should contain only enough for one or two meals, certainly not more than a week's supply.

Glass jars, tin boxes with tight fitting covers, syrup pails with friction lids, wax coated cartons, cellophane bags, or the light proof, air tight, and moisture proof paper bags designed for storing frozen foods all make good containers.

The jars can be sealed tight with used rubbers, or both jars and boxes can be made air and insect tight with strips of muslin dipped in paraffin wrapped tightly at the edge of the cover before the paraffin cools.

Protecting dried foods from insects begins with preventing any contamination during and after drying, by keeping the food free from dust, and handling it only on freshly washed tables or trays in rooms thoroughly screened from flying pests.

Packages Must Be Tight

The tight seal on jar or box is also a protection from moisture. Dried foods must have this protection because moisture, seeping into a package, quickly lowers the quality, and hastens souring or mold. After a prolonged rainy spell, it is well to examine the food occasionally, and if it seems to be taking on moisture to return it to the drier or heat it through in the oven.

Label packages before you put them away; gummed labels are convenient to use, and are safer for paper. With them you run no risk of sticking a pencil point through the wrapping. All types of bags are easier to label before they are filled.

It is a good practice to inspect your store occasionally to see that no hidden damage is getting started. A package that shows any real spoilage should be discarded entirely, but if there is just a little damage starting, reheating may restore the food so you can save it. Because contamination might spread through an entire harvest, bulk storage of dried foods is inadvisable.

Well wrapped, this food should be stored in a cold, dark, dry place. Since there is almost no water in it, extreme cold does it

no harm, but light and heat are both hard on quality. Extreme heat spoils its flavor. Glass jars need to be stored in a dark cabinet or closet. Light does not reach through paper wrapped packages, but they need careful storage to keep them safe from rats and mice. Covered tin cans, earthen ware crocks, or tight wooden boxes will give this protection.

Clothes Care

Whether they are rationed or not, good clothes demand respectful treatment nowadays, and every care that will prolong their life and usefulness. Miss Gladys Meloche and Helen Pearson of the Extension service of the Wisconsin College of Agriculture in a publication on caring for clothing point out several simple practices that any one can follow.

"Taking good care of our clothes helps more than we realize in the war program," they say. "By extending the life of clothing on hand, we release men and machines in factories for war purposes. In many cases there is plenty of raw material but not enough labor and machines to take care of the needs of men in service and civilians, too."

Keep Them Clean

Keeping clothes clean is the first step in their care. Brush them regularly, both inside and out, the authors suggest. Use a whisk broom on heavy clothing, and a soft brush or a cloth for finer materials. Air them frequently. It is a good habit to hang up a garment you have worn during the day outside the closet to air overnight. Use hangers to keep garments in shape, and avoid hanging them together. Garments keep their press better if they have room to hang freely.

Dresses should be protected from perspiration by the careful use of cosmetics that check perspiration. If you use dress shields, remember to wash them frequently like any lingerie. Wash or dry clean a garment—whichever it needs, before it is really soiled.

Alternate the wearing of gar-

IT TAKES
LOTS OF WATER
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It's a well known fact that running water, when furnished in abundance to farm animals, pushes up milk, meat and egg production from 5 to 20 percent. But you can't squeeze big food production out of a "teaspoon capacity" water system. That's why Myers for years has championed adequate capacity along with dependable quality.

More Myers Water Systems are now available for farm use. Your Myers dealer will help you get one. See him, too, for repairs, replacements or additional pipe lines.

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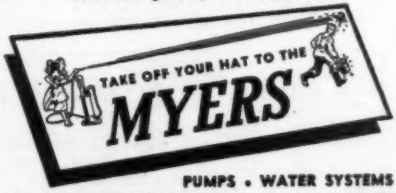


PUMPS • WATER SYSTEMS
SPRAYERS • HAY TOOLS • DOOR HANGERS
WS293

ments to give the fabric a chance to rest. This practice is good for both clothing and shoes, greatly extending their useful life.

"Keep garments in good repair," Miss Meloche says, "watch for rips, tears, loose fasteners, worn places, and snags."

Remember the special care that wool requires. If you're caught in a heavy fall rain, keep in mind that wool is weakened when wet. Put your coat or dress on a well padded hanger and hang it up where it can dry slowly away from intense heat.

"Put clothing on correctly," says Miss Meloche, "and watch how you wear them. Don't jerk, and stretch, or strain at fabrics to pull a garment on. Watch how you sit in them. Avoid strain."

Tips on Saving Poultry Feeds

Because of the great need to conserve livestock feed during the coming year, C. S. Platt, associate professor of poultry husbandry at Rutgers University, offers these suggestions for avoiding feed waste on poultry farms.

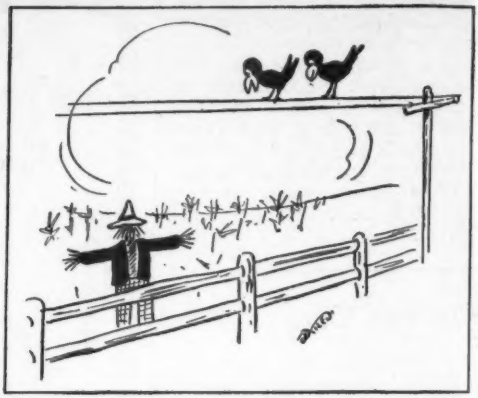
"Keep mash hoppers only partially full, allowing the birds to eat practically all the feed in the hopper before adding more. Aim toward giving them just slightly less than they will eat. You will not only save feed, but the birds will make better use of the grain and mash they do consume.

"Feed some green feed, such as grass and silage. This will reduce the amount of concentrated food needed from five to 15 per cent, depending upon the age of the stock. Young birds obtain more value from grass than adult stock.

"Be sure feed bags are kept in repair and handled carefully to avoid breakage in transit.

"Control rats and mice. They damage bags and consume much feed on poultry farms. One trick is to store feed so that dogs and cats can get in and out among the bags of feed easily.

"Conserve mill products by substituting grain. While this may retard the birds' growth and production some, it will not impair their health and it will help much to stretch your feed supply. It is not always essential that the very best quality grain be used for poultry, a fact deserving special consideration in a period of shortage.



"I was in hopes he would be drafted."

Fuel Value of Different Woods

Two pounds of dry wood of any non-resinous species have about as much heating value as one pound of good coal. Speaking in terms of the ton and cord, one ton of coal may be taken as the equivalent in heating value of one cord of heavy wood, 1½ cords of medium-weight wood, and two cords of light wood.

Below is a list that gives an approximation of the number of cords of seasoned wood of various kinds needed to give the same amount of heat as one ton of coal or 147 gal. of fuel oil on the basis of 80 cu. ft. of wood to the cord, with a moisture content of 15 to 20 per cent.

1 cord of hickory, ash, oak, beech, locust, birch, elm, longleaf pine, hard maple, or cherry, equals one ton of coal, or 147 gallons of fuel oil.

1½ cords of shortleaf pine, Douglas fir, western hemlock, sycamore, red gum or soft maple, equals one ton of coal, or 147 gallons of fuel oil.

2 cords of cedar, cypress, redwood, basswood, poplar, spruce, catalpa, or white pine, equals one ton of coal, or 147 gal. of fuel oil.

W. F. Schaphorst.

Safety Hint

Lighten your work by good lighting. Farm machinery such as feed choppers, grinders and shellers are often operated in poor light. Constant alertness against accident under such conditions imposes a strain, slows up work. Hanging an extension lamp fitted with reflector and 100-watt bulb for the job will favor safety, help prevent these avoidable accidents. A machine doesn't have to see to grab you in the dark.

W. C. Krueger,
N. J. Extension Service

"A stitch in time saves nine,"

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New Blades and Repair Parts Also Available

● The limited quantity of STEWART Clipmasters WPB has authorized us to produce is now available through your dealer. Although there will not be nearly enough to meet the demand, you can keep your present Clipmaster in good working condition with necessary repair parts. Check it now. If you need blades or repair parts, see your dealer or write to us.

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5600 W. Roosevelt Rd., Chicago 50, Ill.
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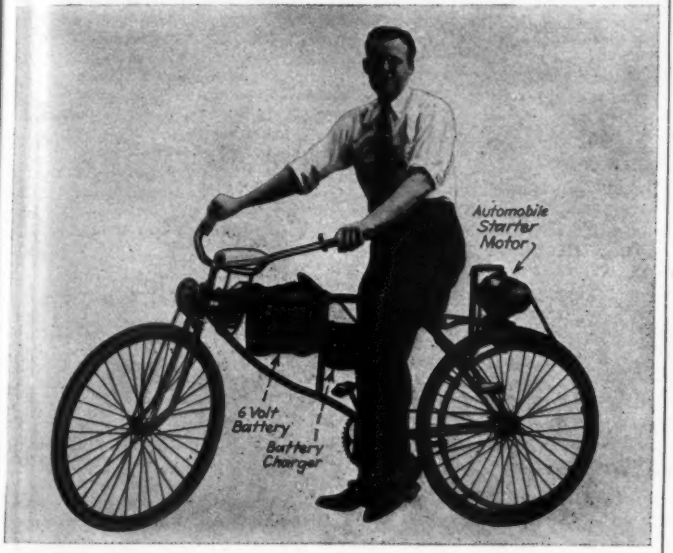
Electric Bicycle

By J. B. STERE

RATIONING of gasoline has stimulated interest in using electric energy for motive power. An assembly that has proved satisfactory for short trips is the electric bicycle constructed by Howard F. Klauss of Pittsburgh, Pa., and shown in the accompanying illustration. Mr. Klauss rebuilt the frame of a regular bicycle to accommodate a six-volt automobile battery and so that a pulley wheel could be attached to the rim of the rear wheel. A six-volt automobile starter motor, mounted over the rear wheel, transmits power to the wheel through a "V" belt.



The maximum speed attained by the bicycle on the level is 20 miles per hour. On a 5% to 8% grade, the maximum speed is 15 miles per hour when the battery is fully charged. One full charge is good for approximately one hour of travel over average Western Pennsylvania highway. An overnight charge with a small trickle charger will restore the battery to normal after it has been half discharged. The charger is mounted on the bicycle for use wherever electric service is available. It is only necessary to plug it into the 115 volt service.

Mr. Klauss has used the electric bicycle to travel to and from work, a distance of three miles one way, for several months. A secondhand battery used during this period, shows no signs of deterioration.

Oil and Coal

The Petroleum Industry War Council estimates that the nation's crude oil requirements for 1943 will average 3,990,000 (million) barrels a day, and will rise to an average of nearly 4,270,000 (million) barrels a day in the first three months of 1944. The year's demand for coal will be about 655,000,000 tons, an increase of about 25 million tons over the maximum production of 1942.

A Canadian inventor has devised a nap of fine glass fibers about one-eighth inch long to cover airplane and propeller surfaces. He claims that the nap reduces the skin friction which causes turbulence of the air at high speeds.

Available for Vital Needs on Farms

NEW F&W MULTI-STAGE EJECTOR PUMP

● IMPROVED performance on lifts 20 to 120 feet are provided by this new F&W centrifugal pump. May be installed directly over well, or in basement, connected by horizontal piping outside. Completely automatic, including exclusive new control valve which requires no manual setting or adjustment.

Other F&W ejector pumps for medium deep and shallow wells, afford complete selection for each individual need. Advanced engineering, simplified design assure quiet, dependable operation. Compact units, deliver more water. Write now for free literature on the complete F&W line—no obligation.

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The "Bullet" for shallow wells, streamlined, efficient, dependable.

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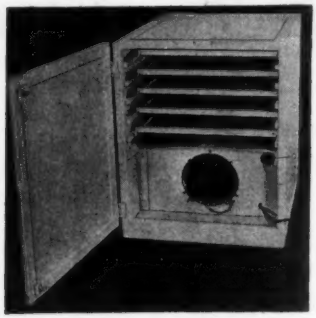
What's New

Names and addresses of manufacturers of the articles described in this column will gladly be furnished upon request to What's New Department, ELECTRICITY ON THE FARM, *24 West 40th Street, New York, N. Y.*

Home Dehydrator

The illustration shows the new General Electric Home Dehydrator with a capacity of from 2/3 to 1 bushel. It has a special heat



tolerant fan and a nichrome wire heating element with adjustable thermal control. The cabinet is made of Masonite on a wood frame. It is of a size to be used on a kitchen table. Price $39.95. (WPB has authorized the construction of 100,000 home dehydrators this year. List of approved manufacturers will be sent on request.

Dehydrator Thermostat

A small thermostat which may be suspended inside or attachced to the wall of a dehydrator is now available from Lyon Rural Electric Co., San Diego, Cal., at a price of $2.80 postpaid. Its bimetallic element has been tempered especially for dehydrator work so it will not creep up in temperature after being set. It is rated to control 1,200 watts of heater load and has an adjustable temperature range of 60° to 200°. with a differential of less than 5° between off and on positions.

Chicken Debeaker

Electric beak shortener and cauterizer. See article, page 12, for description.

Circuit Breaker Plug

The Hopax Circuit Breaker Protector Plug takes the place of the regular plug on your fractional horsepower motor. When the motor is overloaded a thermal breaker in the plug opens the circuit. To reset, remove the plug and raise, then lower a small red lever. Nothing needs to be replaced. The plug is made in 3, 4, 5, 6, 7, 8, 9, and 10 amp sizes. The first three sizes are for ⅛, 1/6, 1/5 and ¼ hp motors respectively. They give individual protection to the motor without special wiring. Price $1.

Labor Savers

Merle Lathrop, a Kansas farmer, wrote of these changed procedures in saving labor to a friend of his in the Dept. of Agriculture.

"I have kept the chicken feed in barrels in the back of the chicken house so they would be out of sight. Jimmie Lou (his wife) had to carry the feed around in the mud to the front door; now I have moved them right out in front of the door and she is pleased how much it saves her.

"I have 12 stanchions which are now closed with one motion instead of 12. I will open the doors for exit by pulling a rope which will save exactly 300 feet of steps a day while choring.

"I am now building a hay feeder on wheels. Instead of loading the hay on my rack and hauling it to the feeder, I'll take the feeder to the hay and have just one handling; also can easily change the feeder location to suit the weather." USDA.

CLEAN-EASY MILKERS

Write for FREE FOLDERS *in color!*

New, illustrated circulars just off the press will give you complete information about the new Clean-Easy Milker...facts about the modern wood construction...about the "swinging pump" action...about the new valve spring...about low vacuum, fast milking, easy cleaning, gasoline or electric power, portable and truck models! Get ALL the facts about Clean-Easy Milker! Write the Ben H. Anderson Mfg. Co., Madison, Wis., Dept. 31

Questions and Answers

Repairs for Electric Iron

▶ **Question:** *Where can I get a new heating element for a Graybar Model 2 110 v, 550 w. electric iron. It is about 7 years old. I need this unit badly as I cannot buy a new iron.*

Mrs. J. F. H., Ga.

▶ **Answer:** The Graybar Co. Service Dept. says this is a discontinued model and has not been sold for many years. They no longer carry repair parts. In normal times specialty companies make elements for such odd irons. They tell us now, however, that with war contracts and shortage of help they cannot undertake it. You might get an iron that works from a second-hand store. There is some talk of the Government permitting the making of a Victory model iron.

Pulleys for Wood Saw

▶ **Question:** *I am installing a three hp motor for sawing wood. What size pulleys do I need? What is the correct distance from motor to saw, and other information?*

W. H. K., Va.

▶ **Answer:** The size pulley you should use on your wood saw will depend on the diameter of the saw. The speed of the teeth of the saw should be about 10,000 ft. per minute. If you have a 1740 rpm motor and a 30 in. saw, you can use a 5 in. pulley on the motor and 6 in. on the saw, or 6 in. on the motor and 7 in. on the saw. If you use a 24 in. saw, your pulley sizes should be about ½ in. larger on the saw than on the motor. If you cannot get pulleys in ½ in. sizes, it will be satis-

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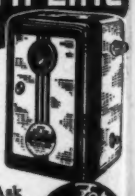

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factory to use either the same ratios as given for the 30 in. saw, or you can use pulleys of the same size on the motor and saw. A little variation in speed up or down will still give satisfactory operation.

Motor for Hammer Mill and Ensilage Cutter

► **Question:** *What size motor should I use on a hammer-mill and ensilage cutter operated by a 2 plow tractor?*
S. W., Ind.

Answer: Your question of what size motor will be necessary to operate a hammer mill and ensilage cutter run by a 2 plow tractor is a difficult one to answer. It depends on whether your tractor is fully loaded, the kind of belt you use, the size of your cutter, the height of your silo and several other factors. In general, however, if the mill and cutter load your tractor, I would say you would need at least a 10 hp. motor to operate them. The motor would have to be operated on a 230 volt circuit and if the distance from the transformer was as much as 120 feet, you would need #6 wire or larger to supply it.

Radio Noises When Wind Blows

► **Question:** *Our radio makes a terrible noise when the wind blows. Radio men who have examined the radio say it is in good condition. Could it be the light wiring and what could be wrong with it?*
W. F. N., Ia.

► **Answer:** If you have an outside aerial, there is a possibility that you have a poor connection where the wires are fastened together. I would also suggest that you examine the outside wires of your lighting system. It is possible they swing against a tree or building, causing some arcing when the wind blows. If this is the case, tighten the wires or trim off the branches so they will not make contact.

Change Milk Cooler Into Freezer

Question: *I have a milk cooler that measures 94 inches long, 35 inches wide and 29 inches high that is cooled with a Westinghouse unit. Will it be possible and practical to convert this over into a "freezer" to freeze vegetables and meats? If so, what must one do to make the change and the approximate cost of same?*
C. H., N. Y.

► **Answer:** We have heard of some experiments now being made in using milk coolers as freezing cabinets by doubling up the amount of refrigerant coiling in the box. We understand that with certain well insulated boxes and by using judgment in not putting much food in the box at one time, some of these cabinets are giving satisfactory service.

We would not care to recommend such an arrangement until we know more about how such cabinets perform in hot weather and under short power outages. It would seem that to be safe you would need an oversize compressor or additional insulation on the box. If you were to double the amount of insulation on the bottom, sides and ends of the cooler with a good vapor seal on the outside of the insulation so no moisture could get into it, you could probably use the present compressor on the cooler but you would need the additional coiling. There is some question whether you could buy the copper coil. Coil and insulation might cost $50.

Drier and Humidifier for Popcorn and Beans

► **Question:** *I noticed your story in the April issue concerning mow cured hay. Can you send me full information on installing a small to medium size drier on this principle? We would use it for drying popcorn and also navy beans. Would also like plans for some sort of way to blow moisture through stored popcorn if it becomes too old and dry.*
G. W. T., Ill.

► **Answer:** The hay drier shown in our April issue would not be satisfactory for drying shelled popcorn or navy beans. Anything which packs as closely as shelled corn or beans will need a different type of drying equipment.

Even if you were drying popcorn on the ear, I would recommend a slatted bottom bin connected with a blower which would blow heated air up through it. If your corn is in the ear, I would suggest that you write to the Department of Agricul-

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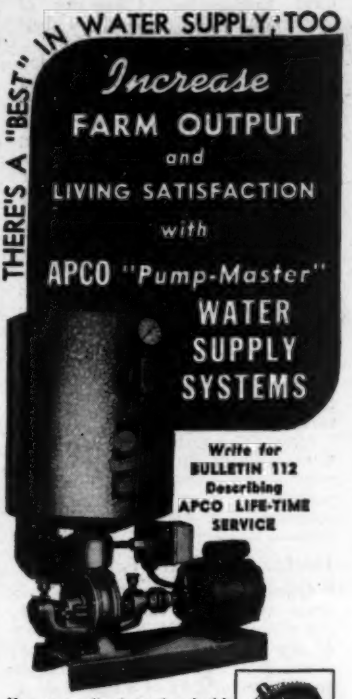
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tural Engineering, University of Wisconsin, Madison, Wis., for their plans for an ear corn drier.

For shelled corn and beans you get into pretty expensive equipment if you are going to dry on a large scale. The University of Maryland, College Park, Md., has been doing some work in developing a grain drier which might answer your needs. You might write to Mr. George Burkhardt, Department of Agricultural Engineering at that institution for any suggestions he could give you.

If you have just small quantities of corn and beans to dry, then you could use one of the small commercial fruit and vegetable driers. You can get information about such a drier by writing to the Georgia State Board of Vocational Agriculture, Atlanta, Ga.

May I suggest that you get in touch with the Rural Service man of your Power Company. I believe he would be able to give you valuable assistance.

Heifer Goes Thru Fence

▶ **Question:** *I have an electric fence with time controlled shock, but although the shock is strong, one of my heifers always gets through. I was told that connecting the fence to the neutral wire of a light bulb of low wattage would keep the fence continuously charged, using the house current* (115 *volts ac*). *Could you please advise me, if this will be safe for the cattle and also for human beings, and if so, how low a lamp bulb would be effective?*

C. G. K., New York

▶ **Answer:** Connecting your electric fence wire through a light bulb to the neutral wire of your lighting circuit should give you no current whatever as the neutral wire of a lighting circuit is connected to ground. If you did get any current it would mean that your ground was poor and that you had better look after it or you might have trouble with your wiring system.

Connecting the fence wire through a lamp to the live wire of the lighting circuit is very definitely dangerous to both human beings and livestock. Many animals and some people have been killed by such makeshift arrangements.

My suggestions would be that you place this heifer in a small paddock surrounded by an electrified fence wire which is well insulated from the posts and with a good ground from your unit to moist soil. Put the heifer in this paddock when the soil is moist and after the heifer gets a few jolts I think you will have no trouble with her.

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Dug Well for Sewage Disposal

Question: *I have a surface well 28 feet deep that I am wanting to utilize for a septic tank for a family of five. It has a cement curb 4 feet in the ground, 8 feet through light clay, the other 16 feet is solid rock and has a solid rock bottom. It is just the right distance from the bathroom but just off the edge of the back porch, and will not have a sink connected with it.*

I have spent so much money on this well that I feel I can't completely abandon it. Mrs. G., Ga.

▶ **Answer:** I am sorry to discourage you about using your well as a septic tank but I do not think it would be the thing for you to do.

The first reason why I would recommend against using the well is that there are likely to be seams in the rock from which the sewage could seep and at that depth, you might contaminate the water supply for a considerable distance around you. If you cemented the well to make it watertight you would have a big job to clean out the sludge from the bottom as you would some day have to do.

Why don't you use that excavation as a storage cellar or cistern and build your septic tank near the surface? It would probably cost no more than to cement the well and you would then have a tank which would be safe and of the proper size to function as it should.

Veterinary Correspondence Course

▶ **Question:** *Please tell me where I can take a correspondence course to be a veterinary?*

M. H., Penna.

▶ **Answer:** We have checked with some Veterinary Medicine Departments and have been advised that there are no correspondence courses in Veterinary Medicine at the present time. Veterinary Medicine includes a considerable amount of laboratory work which needs to be given under the personal supervision of an instructor.

Changes in Farm Service Situation

(See also p. 27, August Issue)

Chief change since our August statement is in

FARM WIRING

If you have been using electric service and need wire to connect some additional piece of productive electrical equipment you can obtain up to 75 feet of BX or non-metallic sheath cable, and up to 75 feet of insulated copper wire (not for household use) directly from your dealer without priority or War Board approval. "The dealer must fill the order if the farmer gives him a signed certificate as follows:

"I certify to the War Production Board that I am a farmer and that the supplies covered by this order are needed now and will be used in the operation of a farm."

If more than 75 feet of wire is needed, you can get up to 50 pounds by obtaining a Copper Wire Allotment Certificate from your County USDA War Board.

If yours is a newly connected farm approved by the County USDA War Board, you can obtain up to 75 pounds instead of 50.

All of *these certificates take precedence over priority orders* placed with your dealer. The certificates are submitted by the dealer to his supplier to replenish his stock. The wire has been alloted by WPB with the WFA responsible for distribution on a state and county quota basis.

FARM MACHINERY DISTRIBUTION

Supplementary Order No. 5 to WFA Food Production Order 3 authorizes manufacturers to distribute up to 40 per cent of their production under WPB Order L-257 as they see fit through normal distribution channels. They must first fill quotas assigned to them under L-170, then they may use their dealer organization and distribute where the demand exists. It is a step toward rationalizing and simplifying the distribution program.

County Rationing Committees will still issue purchase certificates to farmers as before.

Barn Hay Driers

Mow hay driers have been installed this summer at the Kentucky Experiment Station, Lexington, the North Carolina Experiment Station, Raleigh, and on farms in Indiana and Arkansas. The North Carolina unit was used also in drying combined barley in bags. The grain is reported to have dried satisfactorily by placing the bags over the drier ducts.

War industrial plants and facilities financed with public funds reached $15,140,000,000 (billions) at the end of last March according to a report of the War Production Board. Privately financed war facilities cost $4,199,000,000 additional.

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